

REMARKS

Claims 1-5, 7-34, 36-38, and 40-47 remain pending in this application.

Claims 1, 18, and 19 have been canceled. Claims 2-5, 7-9, 11, 13, 20-22, 25, 27, 29, 34, 40, and 47 have been amended.

Claims 2, 14-17, 30, and 31 are independent claims.

In the Office Action dated March 12, 2002, Claims 31 was rejected under 35 U.S.C. § 112, second paragraph, as indefinite, and also was rejected under 35 U.S.C. § 112, first paragraph, as not being supported by an enabling disclosure. Also, Claims 1-8, 11-17, 20-24, 27-29, 31, 33, 34, 36-38, 40, 41, and 44-47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either U.S. Patent 6,034,478 (Kawade et al.) or Japanese Patent Application No. Hei 09-298029 (JP09-298029) in view of Japanese Patent Laid Open No. 64-19658 (Banno et al.). Claims 9-12, 25, 26, 42, and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kawade et al. or JP09-298029 in view of Banno et al., and further in view of European Patent Application EP 0 769 796 A1 (Taiko et al.), Claims 1-8, 11-24, 27-41, and 44-46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kawade et al. or JP09-298029 in view of Banno et al., and further in view of Japanese Patent Laid Open No. 6-12997 (Ueno et al.), and Claims 9-12, 25, 26, 42, and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kawade et al. or JP09-298029 in view of Banno et al. and Ueno et al., and further in view of Taiko et al.

On September 16, 2002 the Patent and Trademark Office issued an Advisory Action stating that the Section 112 rejection of Claim 31 has been overcome, and that for

purposes of appeal, Claims 1-5, 7-34, 36-38, and 40-47 stand rejected. Applicants strongly believe that those claims are patentable over the art relied on by the Examiner for the reasons given on pages 5-13 of the Amendment filed on August 12, 2002. That portion of the Amendment filed on August 12, 2002 is incorporated by reference herein and repeated in its entirety.

Nonetheless, without conceding the propriety of the outstanding claim rejections, Applicants now offer the following additional comments to even further emphasize the distinctions between the claimed invention and the art relied on by the Examiner.

Initially, cancellation of Claims 1, 18, and 19 renders their rejection moot. Also, the claims which formerly depended from those claims have been amended to remove those dependencies.

With regard to the remaining claims, Applicants submit the following comments.

In accordance with an aspect of the present invention to which Claim 2 relates, performance characteristics of a plurality of electron-emitting devices are made uniform in a case where a plurality of electroconductive films are subjected to heating and energization within a predetermined atmosphere comprising a gas for promoting cohesion of the electroconductive film. This is achieved by controlling a timing at which the gas is introduced and by controlling the heating temperature (e.g., to no higher than about 150°C.).

As amended, independent Claim 2 is directed to a method for producing electron-emitting devices, each including a pair of electrodes and an electroconductive film having an electron-emitting region. The electroconductive film is disposed between the pair of electrodes. The electron-emitting regions of the electron-emitting devices are formed by a process including the steps of preparing electroconductive films, and energizing the electroconductive films, while heating a substrate on which the electroconductive are disposed at a temperature not higher than 150°C within an atmosphere comprising a gas for promoting cohesion of the electroconductive films.

As pointed out in the Amendment filed on August 12, 2002, Kawade et al. and Japanese Patent Application No. Hei 09-298029 refer to an electroconductive film that is subjected to energization within an atmosphere for promoting cohesion of the electroconductive film. As a pulse voltage is applied between device electrodes to cause electric current to flow through the electroconductive film, heat is thermally generated in the film itself as a result of that energization of the film.

Banno et al. refers to an electroconductive film being heated by a heater 25 while the film is being energized (Fig. 2). In order to prevent cracking of a substrate due to localized heating during electrical energization of the electroconductive film, heating of the substrate is conducted. This procedure relates to a case where only a single electron-emitting device is formed.

Ueno et al. relates to a surface-conduction type of electron emitting device in which a position and shape of an electron emission portion are controlled.

Applicants respectfully submit that nothing in Kawade et al., JP09-298029, Banno et al., and Ueno et al., would teach or suggest producing electron-emitting devices, each including a pair of electrodes and an electroconductive film having an electron-emitting region, wherein the electroconductive film is disposed between the pair of electrodes, and the electron-emitting regions of the electron-emitting devices are formed by a process including the steps of preparing electroconductive films, and energizing the electroconductive films, while heating a substrate on which the electroconductive are disposed at a temperature not higher than 150°C within an atmosphere comprising a gas for promoting cohesion of the electroconductive films, as recited in Claim 2.

While Banno et al. may teach heating a substrate to prevent substrate cracking due to localized heating caused by energizing of an electroconductive film during formation of a *single* electron-emitting device, unlike Applicants' invention neither Banno et al., Kawade et al., JP09-298029, nor Ueno et al. recognizes a need to make uniform characteristics of a *plurality* of electron-emitting devices produced by subjecting *plural* electroconductive films to heating and energization within a predetermined atmosphere comprising a gas for promoting cohesion of the films. Accordingly, Applicants submit that one skilled in the art, who was faced with such a need at the time of Applicants' invention, would not have even consulted those references, let alone been motivated to combine them in the manner proposed by the Examiner.

For all of the foregoing reasons, Applicants respectfully submit that it would not have been obvious to one skilled in the art at the time of Applicants' invention, to combine either Kawade et al. or JP09-298029 with Banno et al., or Kawade et al. or JP09-

298029 with Banno et al. and Ueno, in the manner proposed in the Office Action, in an attempt to provide the methods recited in Claim 2.

Accordingly, Claim 2 is deemed clearly patentable over those references.

Independent Claims 14-17, 30, and 31 are each directed to a method which recites features that are similar in many relevant respects to those of Claim 2 discussed above relating forming plural electron-emitting devices by heating and energizing, and also are believed to be patentable over the art relied on in the last Office Action for substantially the same reasons as is Claim 2.

A review of the other art of record, including Taiko et al., has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by

telephone at (212) 218-2100. All correspondence should continue to be directed to our
below listed address.

Respectfully submitted,

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